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ON NATURAL AND EXPERIMENTAL PHILOSOPHY.

LECTURE IX.

Opticks.

Hail holy light! *Offspring of heaven! First born!*
Or of th' eternal co-eternal beam;
May I express thee unblamed? MILTON.

THIS *modesty* of the *poet* becomes the dignity of so divine a subject.—*Light* is the blessing which gives poignancy to all others,——therefore the science of *opticks*, which immediately treats of it, must reflect part of its lustre and importance. Plato defines light, "*a rare and subtile flame;*" and perhaps it is but a diluted flame in a state of great thinness or rarefaction. May it not be the inflammable principle perpetually let loose from the sun, and occasionally from other luminous bodies?——May not these particles flowing from the sun, enter into the texture of other bodies, give them the power of inflammability; and become fixed in them, till let loose by the contact of bodies in actual inflammation?——Or, finally, that the incorporated rays of the sun in bodies having affinity with them, may give them the power of inflammability universally; and that colour in bodies may arise from a chymical rejection of the colour reflected to the eye, while all the rest are absorbed into the body? I believe *light* to

exist in the *absence* of a luminous body, and that it is the *luminous body* that puts it in motion. The most general opinion is, that it flows immediately *from* the luminous body in straight lines, in all manner of directions, and consists of *particles* so infinitely small, as to exceed all human comprehension. A *candle* will fill a sphere of four miles in diameter, without the least sensible loss of its substance: But this light existed there before, and the candle only put it in motion; as if 1000 billiard balls touched one another in a line, and the first was struck in the direction of the line, the whole would be put in motion. And if a *row of candles* stand parallel to a *black paper*, with a *pin-hole* in it, each candle (through that hole) will make a separate speck on the *paste-board* a little behind it; shewing that light is repulsive of itself: that its particles are at a great distance from one another; and therefore cross one another without jostling or inconvenience. These particles, by striking the *retina* of our eyes, excite in our minds the idea of light: And when they fall upon bodies, and are by them reflected to our eyes, they excite in us an idea of the colour and shape of these bodies.

In a room *perfectly dark*, if the hand (or any thing) be put into light, and then taken into the dark room, it will be luminous some time, as if covered with phosphorus.—Calcined oyster shells taken out of the light into the dark room, exhibit the colours of the rainbow, &c. shewing that light striking upon bodies, excites their latent light, and makes it visible, as one candle is lighted from another. Or that light sticks to bodies plunged in it, as water does to the hand.

We cannot see through the bore of a bended pipe; which proves that light moves in straight lines in *every medium of uniform density*. But when they pass *obliquely*, out of one medium into another, which is either more *dense*, or more *rare*, they are *refracted*, or bent towards the denser medium, more or less, as they fall more or less obliquely on its surface. To prove which, put a shilling in the bottom of an empty vessel; stand so far from it that the vessel may hide the shilling; if water be then poured into it, the shilling will again be seen. Hence we are deceived in the depth of clear water: A straight stick put into water will appear crooked; and the

sun's rays being bent by passing through our atmosphere, we see him in the *horizon*, before he rises, and after he sets in it. When *rays* fall perpendicularly on any transparent medium, they pass straight through without any medium.

Glass is generally ground into eight different shapes for optical purposes. 1. A *plane glass* is flat, and even on both sides, and of a uniform thickness; will refract the rays of light, but not collect them into one focus. 2. A *plano-convex*, is flat on one side, and a portion of a sphere on the other. When parallel rays fall directly upon it, they pass through it, and are so refracted, as to unite in a point called its focus, just so far behind it, as is equal to the diameter of the sphere of which it is a part. 3. A *double convex* is convex on both sides: Parallel rays passing through it *converge* or meet in a focus, at half the distance they do through the *plano-convex;* and as the heat of all those rays are collected in that focal point, it will burn, melt, or calcine all opaque bodies. 4. A *plano-concave* is flat on one side, and concave on the other. 5. The *double concave* is hollow on both sides, and parallel rays passing through *diverge* or spread out agreeably to the laws of refraction. 6. A *meniscus-glass* is convex on one side, and concave on the other. 7. A *flatted plano-convex*, or multiplying glass, has its convex side ground into several flat surfaces. And, 8. The *prism* has three flat sides, and viewed endwise appears like an equilateral triangle. The *prism* held obliquely to a ray of light in a dark room will affect its smallest *particles* the *most*, and shew them to be a fine *violet colour;* it will assemble the next in size close to the first, and shew them to be of an *indigo colour;* the next *blue;* the next *green;* the next *yellow;* then *orange;* and at last the *red*, which consists of the largest particles, and therefore by the momentum of their motion, the least capable of being attracted out of their way. It is wonderful that these colours occupy spaces on the screen on which they are thrown by the prism, exactly proportionate to the diatonic scale of the *seven notes of musick!* If in the rays so divided a *double-convex lens* be put, it will bring them into one point that shall be perfectly white; which accounts for the *white appearance of light.* As *white* is therefore a composition of all colours, so *black* is a priva-

tion of them all, and properly *no colour;* blue is the natural colour of the atmosphere, so that distant mountains look blue, by being seen through a medium of that colour. All bodies appear of that colour whose rays they reflect most; as a body is red when it reflects the *red rays*, and absorbs the rest. It is not actually red but appears so because it absorbs all the other colours and reflects the red only, pure and unmixed with rays of every other colour. Bodies that appear blue are not blue but seem blue because by the chymical attraction of indigo for all the rays of light except blue, blue only is reflected and all the rest absorbed. Therefore, bodies apparently red are not red, blue are not blue, green are not green, yellow are not yellow, &c. they only appear so in consequence of the colouring principles with which they are impregnated in the process of dying, by which they are enabled to reflect that colour which they present to the eye and to absorb all the others and render them invisible by combining with their colouring principles. Two, or more, colours may be quite transparent by themselves, yet become dark when put together. Thus, if *spirits of wine* be tinged *red*, and put in a square bottle, every object seen through it will be *red;* because it only suffers the red rays to pass through it, and stops the rest. If another bottle be tinged blue, all objects viewed through it will be blue for the same reason: But if the two bottles be held together, the object can no more be seen through them; for whatever rays pass through one bottle to the eye, will be stopped by the other, &c. Rays of light suffer different degrees of refraction, by falling more or less obliquely on the *prism* or *convex lens*, *&c.* and are thereby separated as above; this happens to them in passing through *drops of falling rain:* For being *reflected* towards the eye from the sides of those drops which are farthest from the eye, and again *refracted* by passing out of these drops into the air, they come in refracted directions to the eye, and make all the colours to appear successively in the form of a fine arch in the heavens, which is called the *rainbow*. All drops passing through an ideal plane in the shower, refract a certain colour to the eye—passing through another a little lower, they refract another, &c. so the bow appears permanent while the shower lasts.

Light is *reflected* by the *repellent* quality of bodies, and flies back from polished surfaces, like a ball thrown against a hard and smooth plane: If a stick stand perpendicularly on the plane, and the ball be thrown obliquely on the plane near its foot, it will rebound on the other side the stick, and form an angle with it, equal to that in which it was thrown; the first of these is called the *angle of incidence*, and the other the *angle of reflection*. If upon a *plane looking glass* a ray fall from any object, if a perpendicular be erected there, and the eye go off such a distance as to form the *same angle* on the other side of it, the object will be seen in a straight line behind the glass, —for it is an axiom in opticks, *that we always see objects in that line of rays that come to the eye last.* Hence I see my whole person in a glass but *half* its length; for the rays from my feet striking upon the bottom of the mirror, will form the *angle of refiection* in my eye the same as if it were the *whole* length, &c. Hence also the effects of *diagonal mirrors*, *opera glasses*, *cameras*, *&c.* Parallel rays falling on a *concave mirror* will be reflected also agreeably to those *angles*, and meet in a point at half the distance of the mirror, from the centre of its concavity; if the rays proceed from a hot sun, his image will likewise be found in that point; and burn. The rays which proceed from any small *terrestrial object*, *come diverging* to the mirror, and therefore will not be *converged to a point* at half the distance of the mirror's surface from the centre of its concavity; *but farther from that surface*, the image will be less than the *object*, but will be seen *inverted*, and hanging pendant in the air, quite distinct, by an eye placed opposite the mirror. If the *object* be *in* the *centre of the mirror's concavity*, the *image* and *object* will be *together*, and of *equal bulk:* Therefore when the object is more remote than the centre of concavity, the *image* will be *less* than the *object*, and between the *object* and *mirror;* But when the object is *nearer* than the centre of concavity, the *image* will be *more remote*, and *bigger* than the object. The angles of *incidence* and *reflection* also account for the *small image* in a *convex mirror*.

The *human eye* is lodged in a bed of fat, and secured in a hollow orb of bone;—it is moved by *muscles* which act on its outside like *pullies*, and consists of *four coats*, and *three humours*. The coat in which the body of the eye

is contained, is called the *sclerotica;* it is a *large portion of a globe*, very strong, and of a non-elastic nature;—that part which *completes the globe* on the *fore-part* of the eye, is the *cornea;* it bulges a little forward out of that shape, and is a fine transparent membrane. Next within the sclerotica is that called the *choroides*, which serves, as it were, for a *soft lining* for the other; and within this is spread a fine expansion of the optick nerve, like a net, called the *retina*, upon which are painted, as in a *camera obscura*, *the images of all well-enlightened objects we look at.* The *iris* is composed of two sets of muscular fibres, which dilate or contract the *hole* in it, called the *pupil*, so as to adapt it to a strong or weak light. The *adnata* or *conjunctiva*, is the white of the eye, a fine membrane that *folds under the eye-lid*, and joins to it. Under the *cornea* is a fine transparent fluid like water, and thence called the *aqueous humour:* It gives the protuberant figure to the cornea, and goes through the pupil. Behind this lies the *crystalline humour*, shaped like a double-convex glass, transparent as crystal, of the consistence of hard jelly, and which converges the rays that pass through it to a focus, on the *retina.* It is enclosed in a fine transparent membrane, from which proceed radient fibres, called the *ligamentum ciliare*, all round its edge, and joined to the outward edge of the *iris:* These fibres, by a power of contracting and dilating, alter the convexity of the *crystalline humour*, and shift it a little *backward* or *forward* in the eye, to suit it to the different distances of objects *(an admirable provision!)* The *crystalline humour* is bedded on the *vitreous humour*, which fills the whole of the other part of the orb of the eye, and is transparent like glass; this is the largest of all in quantity, and is much of a consistence with the white of an egg. The *optick nerve* comes from the *brain*, *through the sclerotica* and *choroides*, on that side the eye next the nose; and is enclosed on the outside the eye by coats proceeding from the *pia* and *dura mater*, and of which the *sclerotica* and *choroides* are but a continuation. These are the parts of this wonderful organ!

Rays from any enlightened *object* stream upon the *retina*, and there paint it invertedly, as may be seen by cutting off the three coats from the back part of a fresh bullock's eye and putting a piece of white paper over that part: If the

eye is then held before any bright object, an inverted picture of it will be painted on the paper. The *optick nerve* encloses a *blood-vessel*, which renders objects invisible that fall on it; how wisely therefore is it placed on one side of each eye! that the same parts of an image which fall on the optick nerve of *one* eye, should not fall on the *other*! if three patches are placed at a foot distance from each other on a wall, if the *right* eye be covered, and the *left* look steadily at the right-hand patch, the middle patch will disappear, because it falls on the artery in the optick nerve.

The nearer any object is to the eye, the larger is the angle under which it is seen; therefore an object looks twice larger at *one* than at *two* miles distance. Hence the use of *convex-glasses*, which by increasing *this* angle, make *minute objects* visible; and when the *humours* are grown so flat in decayed eyes, that the picture falls behind the retina, convex-glasses can bring the rays to converge so, that the picture shall be brought back, as it were, to the *retina*. Hence, also, the reason that the *two round* eye requires the *double concave* glass, by its divergency, to remove the image from the vitreous humour forward to the retina. Hence the theory of spectacles.

The *single microscope* is only a small convex glass having the object placed in its focus; and the eye at the same distance on the other side. Its magnifying power is thus calculated: A good eye cannot see any object distinctly at less than six inches distance; if this be divided by the focal distance of the glass, the quotient will be how much the diameter of the object is multiplied.

The *double microscope* consists of an *object-glass* and an *eye-glass*, between which the image is formed and magnified, by having the object a little further from the object-glass than its principal focus; this image, brought so near, is viewed by the eye through the eye-glass. If each glass magnify *six times* (as by the last calculation) then is the object magnified *thirty-six times* by both. This instrument is equipt with a mirror, which, by the *angle of incidence* and *reflection*, throws up a light on the *underside* of the object; which object, being placed in the focus of a *moveable mirror*, has its *upperside* enlightened also.

The *solar microscope* is placed in a round hole in a shutter that only admits, into a dark room, a small cone of rays:

that these rays may be sent straight through the tube, a plain mirror on the *outside* is so fixed, as to reflect them in; they then pass through a large convex lens; after which, they fall upon, and enlighten the object, which is placed in the focus of a *small magnifier*, through which they carry a large inverted image of the object to a white screen, placed at any distance for its reception.

A *refracting telescope* may be made of *two convex glasses*, viz. an *object-glass* and an *eye-glass:* if the focus of the *eye-glass* be in the same part of the tube where the image is formed by the *object-glass:* But then the image will be inverted, and therefore it is only suitable for celestial objects. The magnifying power of this telescope is as the focal distance of the *object-glass* to the focal distance of the *eye-glass:* Therefore if the *former* be divided by the *latter*, the quotient will express the magnifying power, and show, that if the focal distance of *each were alike*, the magnifying power of the telescope would be nothing; and that this magnifying power would increase with its length, for the greater the focal distance of the object-glass, the less may be the focus of the eye-glass.

A *refracting telescope*, that will shew objects in their natural posture, must have *two equal convex glasses* added to the eye glass, and all three must stand at double their focal distances from one another. As these three do but, as it were, compose one eye-glass, the magnifying power of this telescope may be calculated as the last.

Dollond's acromatic telescope is formed on the same principles, only its object-glass is much larger, and is composed of two joining glasses of different densities, one a *plano concave* and the other a *double convex* that fits into the other's concavity. These make the field of view larger, and, by taking off the coloured rays, the image becomes bright and distinct: For as the rays of light do not all bend alike in passing through glass, but are some more refrangible than others, a single object-glass has the prismatic effect to tinge the view with blue, purple, &c. But in the acromatic telescope, the violet rays being most refrangible, are bent most in passing through the convex lens, and the red rays least: in their passage through the concave part of this compound lens, the contrary effect takes place; so the greatest and least refrangible rays meet in a

mathematical point, and, of course, render the field of view colourless.

The *reflecting telescope* exceeds all others in its *magnifying power* and *portable size;* and its outward figure consists of a great and small tube, screwed into the end of one another. At the bottom of the great tube is placed the large concave mirror, with a hole through its middle. Parallel rays from celestial objects falling on this mirror, are reflected back by it, and form the *image* a little short of the *small concave mirror* which faces the hole in the large one. From this image the rays diverge to the small mirror, and are from thence reflected parallel, and inverted, into the small tube, through the hole in the large mirror: Here meeting with a convex lens, they are so refracted as to form the image in the *small tube.* The *image being now brought so near*, requires nothing but a single or compound *eye glass* to send it duly magnified to the retina. Rays from any terrestrial object *will not come parallel* but converge a little; hence the image is formed nearer the great mirror, and therefore a screw is fixed to the small mirror, on the outside the tube, to adjust it to it; and also to the *greater or less convexity* of different eyes. Dr. Herschel's reflector is formed on the Newtonian plan, i. e. its great mirror is not perforated, and therefore its image is received by a plane mirror placed diagonally within the tube, and which sends that image through the magnifying or microscope part fixed perpendicularly in the tube. The excellence of this instrument consists in the parabolic *curvature* and *polish* of its great mirror, which forms the image of the object looked at *so perfect*, that a magnifying power of 6500 can be applied to it.

This instrument is carried to a still greater magnifying and distinct power, by a mirror of near five feet diameter, and of 40 feet focal length, without any obstructing mirrors, so that the light, even from the moon, is too strong for a naked eye to look at through it.

The *diagonal mirror*, for viewing prints, is a pleasing instrument. If a *plane mirror* be placed at an angle of 45 degrees above a print lying horizontal and inverted, it will turn the rays reflected from the print into a horizontal direction to the eye: If then a *large convex lens* be placed between the eye and the mirror, the picture will

be prodigiously magnified; and if an assemblage of *shell-w rk* environ the view between the *print and the mirror*, the picture will have a beautiful frame to it.

The *camera obscura* is formed on the same principles. A *diagonal mirror* is set at the same angle against the landscape, and reflects it downward through a *convex lens* into a *dark box*, where it is painted on a *white paper* placed in the focus of the lens, and on which a hand put into the box may draw the landscape to the minutest exactness.

The *opera glass* was originally formed of a small diagonal mirror, which sends the rays through a convex glass to the eye. Through this a gentleman may look at a distant lady in the company, and the lady know nothing of it.

The *magick lantern* is formed on the same principles as the *solar miscroscope;* a candle supplies the place of the sun; and having its rays tinged with the colours of transparent *figures painted on glass*, throws them through two convex lenses on a white wall in a dark room, prodigiously magnified! Argand's lamp has improved this instrument very much, as well as the lucernal microscope, common illumination, the sea lights of the Scilly Islands, &c.

LECTURE X.

Use of the Globes.

WHEN a ship approaches us at sea, the first part of it we see is its *upper sails*, after that we see its *lower sails*, and then the *hull:* It is evident it moves on a round surface, or we should see the whole at a time. In sailing from Capes we lose sight of them first at the *bottom*, then the *middle*, and at last the *top* disappears. These effects are in all parts of the world. Several persons have sailed round the earth. And all the planets and bodies in the system are round. Hence we conclude that the *earth is a globe* also.

The earth's roundness is no more affected by the largest mountains, than the roundness of a common globe is by a few grains of dust thrown upon it; for they bear no greater proportion to its bulk. It is 7,970 miles in diameter: Near 100,000,000 of miles from the sun: Moves

round him in 365 days, 5 hours, and 49 minutes, at the rate of 60,000 miles an hour; and turns round upon its axis every 24 hours, from west to east, which makes all the heavenly bodies seem to turn round the contrary way, or from east to west.

The particles of which the earth is composed would fly into confusion, if not held together, in the form of a globe, by the *power* of *gravitation*. It is this power which gives *weight* to all bodies, or that tendency they have towards the centre of the earth. Hence the general *top* of the earth becomes its whole surface, and the general *bottom* its centre. The *Antipodes* are, therefore, as much on the top as we. But as the parts of the earth are loose, the violent motion it has on its axis will, in some degree, overpower even the force of gravity, and accumulate more matter round the *Equator*, because the *centrifugal force* is greater there; hence the true figure of the earth is in *oblate spheroid*, or like an orange, 35 miles more in diameter at the equator than at the poles. This has been proved by actual mensuration, and is explained by the whirling rings.

This oblate figure proves its *diurnal motion;* if it were at rest it would be necessarily a perfect sphere. Its motion may be proved by letting bodies fall from leaning towers; from the Asinelli Tower at Bologna (247 feet high) bodies fall $8\frac{1}{2}$ lines to the east of the plumb line. We perceive not this motion, because the *air* in which we live, partaking of the general gravitation, is carried round along with the earth. When a ship turns round, if we look out at the cabin windows, we believe ourselves at rest, and the neighbouring country turning round us;—we are deceived in like manner in the motion of the earth.

Where there is no reflction from contiguous objects, a globe can be but *one half* enlightened by a luminous body; hence, if a globe turns round, there must be a succession of light and darkness, or day and night, to its inhabitants.

Had a globe no other motion, there could be no variety in its seasons or length of days. Gravity decreases as the squares of the distances increase: And if one body move in an oval, round another as its centre of motion, the square of its periodical times will be as the cube of its

distance from that body; this holds precisely with regard to the planets and their moons. The planets sometimes appear to *stand still*, sometimes to *go backwards;* this must always be the case where one body moves nearly in the same plane, and within the orbit of another moving body. —The eclipses of Jupiter's satellites appear later to us by 16 minutes at one time of our year than at another. It is matter of observation, that all the planets revolve round the sun. From all which, we are certain that the earth goes round the sun, and not the sun round the earth.

We know the path our earth describes in the heavens, by observing *that* which the sun seems to describe in the opposite part of the heavens. We find one star without any apparent motion, situated 23 degrees and a half from the axis of this orbit, which is occasioned by being nearly opposite to one of the poles of our earth, and thence called the polar star; hence we discover that sublime contrivance the inclined axis of the earth, which keeping always *parallel to itself*, occasions the different seasons, and different lengths of day and night; diffusing equally, over the face of both hemispheres, the blessings of the sun.

The axis so disposed will necessarily bring the northern and southern parts of the earth alternately to the sun: therefore, when it is summer in the *north*, it will be winter in the *south*, and vice versa. So far on each side the equator as the sun at any time of the year shines vertically, is called the *torrid zone*, and it is bounded by two imaginary lines; *that* to the north, is called the *tropic of Cancer*, and *that* to the south, the *tropic of Capricorn.* When the sun shines vertically over the first, he must shine 23 degrees and a half further than the north pole, and will not therefore set for many days together to the inhabitants of the *north frigid zone*—but it will be then total darkness (the same time) to those of the *southern frigid zone;* hence the poles *must* have but one day and one night in the year. These two zones (as they are called) are bounded by lines also, the north called the *arctic*, the south the *antarctic* circle. The intermediate spaces, between the torrid and frigid zones, are called the *temperate zones.*

In the northern hemisphere the *vernal equinox* (or equal day and night in the spring) is about the 20th of March;

and the *autumnal equinox* is about the 23d of September; in the southern hemisphere the contrary. At the equinoxes the sun shines vertically over the equator; at the *solstices* he shines 23 degrees and a half from the equator.

The *meridian* of any place is a semicircle passing through it, cutting the equator at right angles, and terminating in the poles. The earth's circumference is 360 degrees, each near 70 English miles, and as the earth turns round on its axis in 24 hours, each meridian revolves 15 degrees in an hour, for 24 X 15 = 360. Therefore every place to the *eastward* of another, has its hours sooner, if *westward*, so much later.

The *longitude* of any place, is the number of degrees between its meridian and the meridian of any place from whence the longitude is reckoned, and is deemed *east* or *west*, according as it is situated. The eclipses of *Jupiter's satellites* afford a method of finding the longitude, thus: Suppose an eclipse of any *satellite* happen in London at six in the morning, and that it be seen at another place at four in the morning, the difference of time is two hours, which answers to 30 degrees west of London. These observations the motion of a ship hinders from being made at sea; and hence may be perceived the extreme utility of a regular time-keeper.

The *latitude* of a place is so many degrees as it is from the equator; if to the north, it is said to be in *north latitude;* if to the south of the equator, in *south latitude;* hence, by the lines of longitude and latitude, the face of a globe is covered with *imaginary squares*, and intersecting lines, by which the situation of every spot on the face of the earth is as exactly ascertained, as the parts of an estate are by its hedges and ditches.

The *rational horizon* of a place, extends 90 degrees from that place on all sides. The *sensible horizon* is the boundary of the observer's sight on all sides.

The *ecliptic* is that circle in the heavens through which the earth makes its revolution round the sun; and it is distinguished by conspicuous assemblages of fixed stars, called signs or constellations, such as *Aries*, *Taurus*, *Gemini*, *Cancer*, *Leo*, *&c.* The *zodiac* extends to eight degrees on each side the ecliptic, and with it round the heavens.

The four continents of the earth are, *Europe*, *Asia*, *Africa*, and *America*. The oceans are the *Northern*, the *Atlantic*, the *Ethiopean*, the *Indian*, the *Pacific*, and the *Southern Oceans*. The unknown parts of the earth contain 160,566,276 square miles; the inhabited parts 38,990,569; i. e. Europe 4,456,065; Asia 10,798,823; Africa 9, 654,807; America 14,110,874. In all 199,556,845; which is the number of square miles on the whole surface of our globe.

When a round ball has the different countries, kingdoms, towns, and rivers, delineated upon it, agreeably to their situations, it is a representation of the earth. If a hollow spherical ball could have the fixed stars properly marked on its inside, with the sun, moon, and planets, it would be a representation of the heavens to an eye placed in its centre; but this being inconvenient, the fixed stars are placed on an opaque globe, and the sun and planets represented by patches placed on the ecliptic, because they are continually changing their places.

LECTURE XI.

On the Moon, &c.

The *moon* is no planet, but only a satellite, or an attendant on the earth. The farther any planet is from the sun, the more occasion it has for such a help to its light; hence Mercury and Venus are without moons, as being near the sun; but Jupiter has four, and Saturn seven, because of their distance from it.

The moon's face abounds with great *inequalities*, and hence she reflects a more chaste and agreeable light than if her surface were smooth. She always keeps the *same face* towards us (some say because the quality of that side of her is more adapted to catch the attraction of the earth than the other), and consequently must turn once round her own axis, while she goes once round the earth in her orbit. Her *periodical revolution*, or time of going round from one point of her orbit to the same point again, is 27 days 7 hours 43 minutes: But her *synodical revolution*, or time from change to change, is 29 days 12 hours 44 minutes;—this difference is caused by what the earth has

advanced in the ecliptic during that time, which is 29 degrees and one-tenth. *(Illustrated by the Orrery and Ferguson's paradox.)*

The moon's mean distance, found by her parallax, is 240,000 miles. Her diameter is 2180 miles,—and she moves about 2290 miles every hour.

The *moon* has no light of her own, but only reflects the beams of the sun, as a polished body does the light of a candle; hence, as she is a globe, we must sometimes see *more*, sometimes *less*, of her enlightened side, i. e. when she is between us and the sun, her dark side is towards us, and therefore she disappears; as she advances forward we see a small part of her enlightened side, and call it the *new moon;* the next evening, she is got a few degrees farther to the east, and we see *more* of her illumined side;—every evening we find her advanced, till she rises in the east in opposition to the sun in the west, and then her whole enlightened side is towards us, and we say that she is at the *full;* her decline is from the same reasons; and a ball over a gate enlightened by the sun conveys a clear idea of both. *(Illustrated by the Orrery.)*

The earth is a *moon* to the moon, waxing and waning as she does; it appears 13 times as large to the Lunarians as the moon does to us, affording them both a useful and an amazing spectacle; for its continents and seas may be plainly perceived by them, as well as its rapid motion round its axis. *(Proved by the Orrery.)*

The planets as well as their satellites being *enlightened by the sun*, must cast *shadows* towards that part of the heavens opposite to the sun. Were the earth larger than the sun, its shadow would spread and extend far beyond the orbit of Mars, and consequently *eclipse him*, for he is about 42 millions of miles from the earth, when they are in conjunction; but the earth's shadow never reaches him, therefore it must end in a *point* short of that distance; another proof how much the sun is larger than the earth: but the moon is eclipsed when she falls into the earth's shadow, which, for the reasons above, can never happen but when she is at the *full*, because that is the only time when she is opposite to him; but were she a *luminous body*, she could not be darkened by the earth's shadow.

The sun is eclipsed when the moon passes directly between him and any part of the earth; this can only happen at the *change of the moon.*

Were the moon's orbit in the *plane* of the earth's path round the sun, she would be eclipsed every time she came to the *full*, and would eclipse the sun every time she came to the *change;* but one half of her orbit is on the *north side* of the ecliptic, and the other half on the *south side* of it, and must therefore cut the ecliptic in two opposite points, called the *moon's nodes.* The angle of this orbit with the ecliptic is 5 degrees and one third. *(Shewn on the Orrery.)*

When the moon is at full, above 12 degrees from either of these nodes, she passes clear of the earth's shadow, and cannot be eclipsed; and when she changes above 18 degrees from either of them, she passes either above or below the sun, and therefore cannot eclipse him: But if she be at full or change within those distances, then an eclipse happens, and if she be *in* the node, the eclipse is central. *(Explained by the Orrery.)*

If these nodes kept always in the *same* signs of the ecliptic, the sun and moon would always be eclipsed in the same *places*, and at the same *time*, every year:—but the eclipses *fall back* every year from the east to the west, in such a manner, as to prove that the moon's orbit *moves backwards* 19 degrees one-third every year; so that in 18 years and 225 days, there is a return or restitution of the same eclipses; and they then appear in the same places and the same time as before. *(Illustrated by the Orrery.)*

The earth and moon are chained to one another, as it were, by their *mutual attraction*, which, like the sun and planets, is in proportion to their quantities of matter. If a heavy and a light ball be tied to the two ends of a string a yard long, and tossed up into the air, they will form to themselves a centre of gravity. On this centre of gravity the earth and moon revolve in *equilibrio*, and its distance from their centres is inversely as their quantities of matter, *viz.* 6000 miles from the earth's; consequently the centre of gravity forms the *real orbit*, and makes the earth 12,000 miles nearer the sun at the time of *full moon* than at the time of change. This is demonstrable by the sun's appearing so much larger at the full than at the change of the moon, as measured by a micrometer.

The further any part of the earth is from this centre of gravity, the greater is its tendency to fly off in a tangent; —therefore the *side of the earth* which is turned away from the moon has a greater *centrifugal motion* than its *centre* has: and this *centre* a greater than *the side* next the moon. At the earth's *centre*, the moon's attraction balances the centrifugal force, but must be *stronger* than the centrifugal force of the *side of the earth next her*, and *weaker* than the centrifugal force of the *side farthest from her*. As the moon's attraction is greater than the centrifugal force on that side of the earth next the moon, of course the *tide* will rise on that side: But as the centrifugal force on the opposite side is greater than the moon's attraction, the tide will also rise on that side; hence the reason of *two* tides in 25 hours. *(Proved by the tide table.)*

The sun agitates the water in proportion to the moon, as 3 to 10; therefore, when the sun and moon draw in the *same direction*, they cause a *spring tide*, and this happens at the change of the moon. If the earth had no moon, the sun would cause a *small tide* in the ocean, therefore, at the full of the moon spring tides happen as well as at the change, for the sun's centrifugal tide being reinforced by the moon's attraction, and the moon's centrifugal tide by the sun's attraction, spring tides happen both at full and change of the moon; but at the quarters, when they attract in *contrary directions*, they destroy the effects of each other in a degree, and then we have *neap tides*. At the *equinoxes* the sun and moon being both on or near the equator, their attraction is more in a *line* than at most other seasons, hence the *prodigious tides* which generally follow these seasons, both in the air and sea. A planet also falling in conjunction with the sun and moon, will increase the tides still more.

The *air* being a fluid much lighter than water, is more affected by the moon's attraction. Hence, at the full and change the barometer is most affected; and some say lunatics are more affected at those seasons; which, if so, must be by the spring tides of the air.

To the inhabitants situated at a considerable distance from the equator, the *different parts* of the ecliptic rise at very *different angles* with the horizon. In northern latitudes, the signs, *Pisces* and *Aries*, rise with the *smallest*

angles; Virgo and *Libra*, with the *greatest;* therefore when the moon is in *Pisces* and *Aries*, she must rise nearly at the *same hour* for six or seven days together. In *winter* the moon is in those signs about the time of her first quarter; but as she must then rise about *noon*, *that* rising is not taken notice of. In *spring* the moon is in them about her *change*, but as she then gives *no light*, her rising is also unnoticed. In *summer* she rises in *Pisces* and *Aries*, in her *third quarter*, about twelve o'clock at night, consequently the phænomenon is seldom *then* regarded; but in *autumn* those signs are opposite the sun, and therefore the moon must be *full* in them, and very usefully for the farmers, in Europe, rises in their harvest immediately after sun-set for several evenings together. and thence acquires the name of the *harvest moon.* *(Proved by the Orrery and Globe.)*

LECTURE XII.

Astronomy.

THE planets are retained in their orbits by the *power of* gravity: but as the sun is by far the largest body in our system, if no other power acted on them, they would be *drawn down to the sun.* All bodies therefore that move in a curve, as the planets do round the sun, must be acted upon by *two principles;* and motion being *rectilineal*, we suppose the Almighty gave each planet this kind of impulse at its creation, so that between one power *drawing to the centre*, and another *acting perpendicular to it*, the planets are impelled in elliptic orbits round the sun, as a pebble tied to a mill-stone and thrown from the hand, would revolve round the mill-stone. An idea of this is given by a ball impelled singly in a square in two directions, one perpendicular to the other; when they both act, they give the diagonal of the square, &c.

Our system must be conceived as within the concave sphere seeming to be formed by the *fixed stars*, and the *sun* as near the centre of it, a huge globe of fire, near a million of miles in diameter, and near 100 millions of miles from the earth, according to calculations made from the transits of Venus.—He turns round on his axis in 25 days

and 8 hours, as may be seen by spots on his face; and was no doubt intended to give light, heat, and vegetation, to the seven primary and fourteen secondary planets which revolve round him.

All these planets move round the sun from *west by south to east*, in orbits near circular, and almost in the same plane. The *comets* move in all manner of directions, in orbits which are very long ellipses, much inclined to one another, and to all the orbits of the planets. The tails of comets are only thin vapours; for, if they were flame, no star could be seen through them.

The time in which any planet goes round the sun is the *length of its year*, and the time on which it turns round on its axis, is *the length of its day and night* taken together, as represented in the Orrery.

The nearest planet to the sun is *Mercury;* he goes round him in 87 days 23 hours, is about 3000 English miles in diameter, and distant from the sun 42 million of miles; he moves in his orbit about 100,000 miles every hour; the length of his days and nights is unknown, being but 56 times the sun's apparent diameter from him; he sets and rises too near the sun for any observations to be made of his spots.

Venus goes round the sun in 224 days 17 hours; her diameter is near 7,900 miles, her distance from the sun is 79 millions of miles, her hourly motion in her orbit is 69 thousand miles, and she has been said to turn round on her axis in 24 days 8 hours of our time, though from her want of visible spots, this diurnal motion is much doubted. By her axis inclining 75 degrees from a perpendicular to her orbit (agreeably to the older astronomers), she has two summers and two winters at her equator.

Her orbit also deviates three degrees and a half from the plane of the ecliptic, so that she has two nodes, or places, where she crosses the ecliptic, one in the 14th degree of Gemini, and the other in the 14th of Sagittarius. If the earth happen to be in those signs when *she* is, then we see her transit over the sun's face, a phænomenon which happened the 1st of April, 1761, and gave the astronomers the opportunity of calculating the sun's parallax, *viz.* $7'' 40'''$ and of consequence his distance, as well as that of the planets.

The *earth* is the next planet in the order of the system.

Mars, still higher in the system, is 167,000,000 of miles distant from the sun, moves at the rate of 47,000 miles an hour, goes round the sun in 678 days, and turns round on his axis in 23 hours, 39 minutes, and 22 seconds, at a medium, according to Dr. Herschel's observations on the spot on the face of Mars; though he observes his motion not to be regular. He is about one-fifth as large as our earth: his *red appearance* is supposed to be occasioned by a gross thick atmosphere with which he is surrounded, and which is supposed to supply his want of a moon.

Jupiter, the largest of the planets, is 570,000,000 of miles distant from the sun, and above 400,000,000 from our orbit; he moves round the sun in about 12 years of our time, at the rate of 30,000 miles per hour; he is near 90,000 miles in diameter (i. e. near 1000 times as large as our earth), is accompanied by four moons, some larger and some less than the earth, which revolve round him as our moon does round us; and the faint substances on his face, called his belts, are supposed to be parts of his atmosphere drawn into lines by his exceedingly quick revolution on his axis, which is once in 9 hours 49 minutes. That axis being perpendicular to the plane of his orbit, prevents any variety in his seasons, it being perpetual summer at his equator, and perpetual winter towards his poles.

Saturn, the second in magnitude, and hitherto considered the most distant of all the planets, is 949 millions of miles from the sun;—near 70,000 miles diameter; moves at the rate of 18,000 miles an hour;—but is too remote for his spots to be seen. He is equipt with *five moons* (Dr. Herschel has seen two more) besides a *broad luminous ring*, which also reflects the sun's light strongly upon him. This planet is near 30 of our years in making his revolution round the sun.

The *Georgian Planet* (or rather the *Herschel*), so called by its ingenious and indefatigable discoverer, Dr. Herschel, was first seen near one of the feet of Gemini, its year is calculated to be 82 1-2 of ours, its distance twice that of Saturn from the sun, and its size 100 times as large as our earth. It has two satellites; and more have been lately discovered.

These calculations are the latest and most accurate that have been made; they are given in round numbers to ease the memory, and are founded on *mathematical* as well as *ocular* certainty.

By an *attempt* at the same kind of calculation to find the distance of the *fixed stars*, it was found *that the whole diameter of the earth's orbit would not make a parallax or angle with the nearest of them!* Their distance therefore must be inconceivably great. Light diminishing as the squares of the distances increase, the sun's rays therefore cannot enlighten the fixed stars; and a telescope which magnifies 400 times does not sensibly magnify them; it is therefore highly probable they are *suns* like ours, shine by their own unborrowed lustre, were not intended for our service, but to give light, heat, &c. to systems of worlds of their own, formed probably for the same purposes as ours, though too remote for our eyes, assisted by the best glasses, to perceive. We find the worlds of our system revolve like the earth, and are covered with *continents*, *seas*, *hills*, &c. Who can doubt, therefore, but they are inhabited, as well as all the worlds of the other systems? How much too large is this idea for the human imagination! By the lately improved telescopes thirty thousand of these suns have been found, more than the naked eye can perceive! Were our glasses still better, we should, no doubt, find more—it is not improbable there may be stars so distant that their light has not reached the earth since the creation! Many of those stars appear double, and coloured green, blue, red, violet, &c.

Let us on the wings of imagination then launch into the immensity of space, and behold *system* beyond *system*, *above us*, *below us*, to the *east*, the *west*, the *north*, the *south!* Let us go so far as to see our sun but a *star* among the rest, and our system itself as a point, and we shall but even then find ourselves on the *confines of creation!* How inadequate then must be the utmost stretch of human faculties, to a conception of that amazing *Deity* who made and governs the whole! Should not the narrow prejudices, the littleness of human pride, soften into humility at this thought!

THE RANGER, No. 2.—FOR THE MAGAZINE.

"*From grave, to gay, from lively to severe.*"

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Whilst we were busily employed in the task of collecting matter sufficient for our second number, we were interrupted from our employment by the entrance of the postman who brought us the enclosed letter from Mr. Jeremy Jingle —as the epistle of this gentleman may probably excite the risible faculties of some of our readers, we therefore venture to send it forth to the world "with all its imperfections on its head." Through this medium we also beg Mr. J. to accept our most sincere thanks, as he has been the means of opening to our view *a plan* which, if followed, will render, we hope, our Ranger, durable, amusive, and instructive. It is well known that the labour required to render a series of essays interesting, is immense, and Rangers, as experience has proved, are at best but unsteady people. We therefore solicit the correspondence of those persons, whose leisure hours are devoted to the pleasing science of literature. All letters addressed to us through the medium of the printer will be duly attended to.

The prolixity of our friend Jeremy will preclude the comments which we intended to have made on his letter. We shall therefore content ourselves with advising him to divest himself, as soon as convenient, of that "plentiful overflow" of vanity which is expressed in almost every sentence of his dolourous epistle. We shall say no more on the subject,—but leave the reader to make what remarks he pleases on the following:

Mr. Ranger,

Having, with great pleasure, perused your first number, and, in consequence thereof, entertaining a high opinion of your candour and good nature, I am induced to lay before you the history of my grievous disappointments and mortifications, and shall commence with informing you that I have long had a great desire of seeing a production of mine in print. Numberless pieces

have I offered to numberless editors—but, alas! they have all been uniformly rejected, and the excuses alledged for their non-insertion were, "that my essays were too prolix, dull, &c. The fact is, Sir, I never sit down to write without branching off in as many directions as the chandelier of an episcopalian church. One moment I am soaring on the wings of fancy above the clouds—the next grovelling on the earth!—wandering from subject to subject, and like *Noah's dove*, in want of a resting place.

Once in the ardour of my prolific fancy I undertook to write a *tragedy*—I crammed it as full as possible with sighs, groans, and murders—and fondly thought there was not a page of it but what contained incidents sufficiently distressing and pathetic to crack the heartstrings of the most unfeeling class of mankind. Like a miser on his treasure, or a drunkard on a full flowing bowl, so did I feast my eyes on this charming performance. "Ye Shakspears and Drydens avaunt, exclaimed I, far beyond you have I soared. You only hit the medium, I have arrived at the highest point of human excellence!" Each day I perused its contents with enthusiastic rapture and anticipated the time when my name should descend to posterity as the *chief* of dramatic writers!

But, whilst indulging in these enlivening hopes, some demon, jealous of my happiness, inspired me with the thought of placing my production in the hands of a friend, in whom my confidence was unbounded. He took it, and, after keeping it about three weeks, returned it with this answer, "that if *three acts* were *expunged* and additional scenery added, he made no doubt it would play as well as the burletta of *Tom Thumb the Great!!!*—Blood of the Jingles! what profanation! half frantick with rage—I tore the cursed cause of my insult into ten thousand pieces—and furiously hurled it into the fire; the flames quickly seized upon it and what had occasioned above six months labour and anxiety was destroyed in a moment.

My itch for scribbling still continued in spite of repeated disappointments, and some time after I received another mortification which would have completely cured any other person beside myself.

Being on the reservoir at the Schuylkill one Sunday afternoon, I set myself down and took out pensil and pa-

per intending to write a few stanzas. I had been but a few minutes in this situation when a wag of my acquaintance passing along with a large company of ladies and gentlemen observed me; and, before I was aware of his intentions, snatched the paper from my hands and throwing himself into a mock heroic attitude, reads aloud,

"How sweetly the Schuylkill is flowing
"How briskly the breezes are blowing."

Then, dropping the paper, fell into a most violent fit of laughter in which the company joined him, and "Jingle the Poet," resounded throughout the croud.——I could bear it no longer, I hastened home with all possible expedition—shut myself in my room in the attic story—and did not venture out again until I thought the affair was pretty well blown over;—But as I have nearly exceeded the limits of my paper, I will now conclude; what followed shall be the subject of a future letter, from

Yours, &c.

JEREMY JINGLE.

CRITICISM—FOR THE MONTHLY MAGAZINE.

A poem on the restoration of learning in the east; which obtained Mr. Buchanan's prize, by Charles Grant, A. M. —Printed, Salem, by Cushing and Appleton, 1807.

The revival of learning in the eastern world is a circumstance so highly interesting to mankind in general, that of late every means have been employed, to awaken the dormant GENIUS, who in former times led art and science over the beauteous borders of the GANGES. The Rev. CLAUDIUS BUCHANAN, stimulated with a warm and generous zeal for the promotion of oriental literature, gave to the university of Cambridge, in 1804, two hundred and

ten pounds; desiring that it might be divided into four prizes; one of which was, "sixty pounds for an English poem on the restoration of learning in the east." This gave occasion to the poem before us which, though not very comprehensive in its plan, bears many emphatick characteristics of genius and learning.

The poem opens with a lamentation of the GENIUS of the GANGES; He mourns over the prospect of the barbarity and ignorance which lowers over his delightful realms. The degraded condition of Hindoo literature during the latter part of the last century; the furious bigotry of AURUNGZEBE, who, "throned in blood," guided the ruin of persecution, together with the invasion of NADIR SHAH, and the intestine contentions, which gave the last fatal shock to oriental learning are successively brought into review. A transition is then made, from the mournful gloom which fanatick persecution spread over eastern learning to the splendor of ancient Hindoo literature, particularly during the period the RAMAS governed India. The first ages of authentick Indian history are brought into view; an account of the poetry and philosophy of VYASA is given, and a reference is made to the last brilliant era of Indian literature, when the poet CALIDASA flourished, whose divine song, as our bard expresses himself,

.....Sphered seraphs.....
Lean'd from their rolling orbs to hear.....

VYASA, the celebrated Indian philosopher, appears to have been the founder of the Indian school, called the *Vedanti* school. The principal tenet of this philosophical sect, was that which has been so ingeniously recommended to us in latter times by bishop Berkeley, i. e. "That matter exists only as it is perceived." After the philosophy of VYASA is particularly described, the author deviating considerably from his general design, proposes a conjecture concerning the original of the immaterial philosophy, which doctrine, he thinks, may have got its rise from the principles of polytheism. *Lastly*, the revival of learning on the banks of the *Ganges* under the auspices of the English, and particulary of the Asiatic society is celebrated. The poem then concludes with an anticipation of that

period when the arts, sciences, and religion of Great Britain shall be diffused throughout the eastern world.

We cannot express an intire satisfaction in the general construction of the poem; it appears to us that too much of the work is taken up in looking over the former states of Indian literature, and too little in establishing the utility and importance which the revival of learning in the east, must necessarily be, to mankind at large. The influence of science is not local, nor temporary; wherever it flourishes, in whatsoever clime it luxuriates, the effects of its influence must ultimately become general. The celebration of the revival of learning is, generally speaking, but a string of lengthy encomiums on those gentlemen whose zeal for science led them to toil in rousing the muses of the east.

We will now select a few passages, to shew that the author is no inconsiderable poet. His style is smooth, beautiful, and poetical; his images are elegantly conceived, and, oftentimes, enchantingly delineated.

" Shall these bright hours of rapture roll away,
" And mournful years their gloomy wings display?
" These beauteous realms shall tyrant war deface,
" And fierce oppression crush my favour'd race?"
Thus Ganges' Genius spoke, while yet, sublime
With arts and muses, smil'd her native clime,
And, rich with science, round the plains he lov'd,
The golden hours in blooming circles mov'd.
With grief he saw the future ages rise,
Dark with their sad and fearful distinies;
Mark'd bleeding science pinion'd to the ground,
And all her blasted trophies withering round!

Speaking of Aurungzebe as dreaming over his bloody designs,

Thus by fell visions rous'd th' usurper springs,
Fierce from his lair, to lap the blood of kings.

His descriptions are very natural.

Alas! how dark the baleful ruins spread!
What filial tears the sons of science shed!

While in each bower the widow'd arts repine
And learning clasps her violated shrine.
Sad on his staff mid Casis' blasted scenes,
Himself how fallen! the aged Pandeet * leans,
Exalts th' insulted Vedas † high in air,
And prays, and pours his soul into the prayer:
" Say why, Narayen, while thy votary weeps,
" Thus wrapt in dumb repose thy thunder sleeps?
" Oh! where that arm, with countless trophies crown'd,
" In heaven's dread lists o'er vanquish'd gods renoun'd;
" Whose vengeance dash'd proud Rahus' impious crest,
" And tore, with lion fangs, the tyrant breast?"

As a specimen of smoothness and beauty of style, we may select this passage:

" Ah! beauteous Cashmere, love's enchanting vale!
What Abdallah ‡ shall now thy woes bewail?
In vain thy snowy mountains, swelling round,
For peace alone would guard the holy ground:
Oh, once for thee the rosy-finger'd hours
Wove wreaths of joy in pleasure's echoing bowers;
Once round thy limpid stream and scented grove,
The haunts of fancy, Freedom lov'd to rove.
And moulded by the hand of young desire,
Thy daughters shone amid the virgin choir:
Not fair Circassia touch'd her blooming race
With tints so tender of impassioned grace;
With all their glances wove such artless wiles
Or breath'd such brightness round their angel smiles."

L.

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* *Pandeet is a Hindoo doctor.*

† *The vedas are the sacred looks.*

‡ *A celebrated Persian poet, who died A. D.* 1520.

Necessary rules for making *bon mots*, satirical attacks, and sarcastick retorts.

(From Bannantine's new JOE MILLER.*)*

FEEL your ground before you take a single step, and adapt yourself to your company. You may find yourself among a set of wretches who never read Joe Miller, and yet have comprehension enough to understand him. This is fine! Make the most of such a situation; for it is a happiness not often to recur. If any aspiring member venture to oppose you, crush him without mercy. If you do *not* know what he is going to say, tell him you can help him out in that story, should he be at a loss; if you *do*, cut him short, by snatching the sting of the tale from him, and turn it against himself. *You* will get the laugh, and the audience will be happy to reduce him to their own level, by measuring him with you.

Never mind what smart you occasion, provided you can say a smart thing. Your enemy you have a right to wound; and with whom can you take a liberty, if not with a friend? A pretty thing, truly, if a jest were to be stifled because it might give pain! It would give much more to suppress it: and if others do not like the taste, how can they expect you to swallow it?

Latin *bon mots* are safe, if you are sure of the pronunciation; for they who understand them will laugh naturally, and they who do not, for fear of being thought ignorant. With women this rule will not apply; do not, therefore, in their society, quote Horace, or confess yourself a freemason; for they naturally hate and suspect whatever they are excluded from.

It is a very successful and laudable practice to poach upon Joe's premises with some poor dog who is fain at night to start the game, which you have marked down in the morning. At the given signal, let fly, and you are sure to kill the prey, and perhaps some of the company with laughter. Be sure that your pointer is stanch.

When you launch a good thing, which is only heard by the person next you, wait patiently for a pause, and throw in again. Your neighbour, possibly, will not renew his laugh, but will excuse you, well knowing that you cannot afford to throw away a good thing.

If your party be stupid, and you want an excuse for getting away, give vent to some double-entendres to distress the women. This will answer your purpose; for the men must be fools, indeed, if they do not kick you down stairs.

In the want of other subjects for your raillery and sneers, personal defects form a tempting source of pleasantry. When your wit has not a leg of its own to stand on, it may run some time upon your neighbour's wooden one. At least a dozen jokes may be endorsed upon a hump back; and you may make a famous handle of a long nose, by inquiring of its proprietor whether he can reach to blow it; whether he can hear himself sneeze, &c. &c. Take care, however, while making fun with his nose, that he does not make free with yours.

If your party be equal to yourself, in their knowledge of *the books*, or talent for extempore repartee, laugh loud at your own sayings, and pretend not to hear theirs. Laughter is catching, though wit is not.

If they be decidedly superior in both these requisites, have a bad headach and be silent. You could not speak to advantage, and it is better to be pitied for having a pain in the head, than for having nothing in it.

Mimickry and buffoonery are good substitutes for wit. Thus you may make some use of a prosing old poet, by listening to him with feigned attention, and at the same time thrusting your tongue in the opposite cheek. This will amuse the company, and cannot offend the old gentleman, for he will be wise enough to wish your tongue kept where it is.

Beware of quizzing your host too severely, or he will not ask you again. Be merry and wise. A laugh is a tempting thing, I own; so is turtle soup. Always remember that a good dinner is in itself a good thing, and the only one that will bear frequent repetition.

If you have once got a man down, belabour him without mercy. Remember the saying of the Welch boxer: "Ah, sir, if you knew the trouble I have had in getting him down, you would not ask me to let him get up again."

Invariably preserve your best joke for the last; and when you have uttered it, follow the example now set you, by taking your leave.

An account of James Woodhouse, the poetical shoemaker, whose works have been lately published.

[*From the Annual Register for* 1764.]

THIS extraordinary person is about 28 years of age, and has a wife and several small children, whom he endeavours to maintain by great application to his business, and by teaching children to read and write, which is all the learning he ever received himself, being taken from school at seven years old.

He lives at the village of Rowley, near Hale's Owen, about seven miles from Birmingham in Staffordshire, and two miles from an estate of the late Mr. William Shenstone, called the Leasowes.

After he was taken from school he had no means of gratifying his insatiable thirst after reading and knowledge, but by procuring the magazines with such little perquisites as he could pick up, till about five years ago, when an accident brought him acquainted with Mr. Shenstone.

That gentleman, who, by improving nature with a true taste of her beauties, has rendered the Leasowes the admiration of all who have seen the place, used to suffer his delightful walks to be open to every body, till the mischief that was done by the thoughtless, or the malicious, obliged him to exclude all but such as should have his special permission on a proper application for that purpose. Woodhouse, who was more a loser by this prohibition than almost any other person whom it excluded, applied to Mr. Shenstone for leave to indulge his imagination among the scenes, which had so often delighted him before, by a copy of verses. This immediately procured him the liberty he solicited, and introduced him to Mr. Shenstone himself. The poem appeared to be so extraordinary for a person in so obscure a station. who had been taken from school at seven years old, and had since read nothing but magazines, that he offered him the use not only of his garden, but his library.

Woodhouse, however, did not suffer his love of poetry, or his desire of knowledge, to intrude upon the duties of his station: as his work employed only his hands, and left his mind at liberty, he used to place a pen and ink at his side, while the last was in his lap, and when he had made

a couplet he wrote it down on his knee; his seasons for reading he borrowed not from those which others of his rank usually devote to tippling, or skittles, but from the hours that would otherwise have been lost in sleep.

The versification of this extraordinary writer is remarkably harmonious, his language is pure, his images poetical, and his sentiments uncommonly tender and elegant.

His poem to Mr. Shenstone was written when he was about three and twenty; and though in the character of a suitor, and with a proper sense of the inferiority of his station, yet there is a consciousness of that equality of nature, which petitioners & dedicators too often prostitute or forget.

After an address to Mr. Shenstone, in which he encourages himself by considering the general kindness of his character, he says;

Shall he, benevolent as wise, disdain
The muse's suitor, though a sandal'd swain?
Tho' no auspicious rent-rolls grace my line,
I boast the same orginal divine:

Tho' niggard fate withheld her sordid ore,
Yet lib'ral nature gave her better store!
Whose influence early did my mind inspire
To read her works, and praise her mighty Sire.

A copy of this poem, and of another addressed to the same gentleman, were sent by Mr. Shenstone's direction, with some manuscript poems of his own, to a friend in London; this friend shewed them to some of his acquaintance, and a small collection was made for the author, which produced an ode on Benevolence; by this ode he appears to have profited by Mr. Shenstone's library; for he talks of Palladian skill, Sappho's art, Phidias' chissel, and the pencil of Titian. But his force of thought and skill in poetical expression, appear to greater advantage in a poem of 50 stanzas, each consisting of 4 verses, entitled Spring: this contains a striking picture of the infelicities of his situation, and the keenness and delicacy of his sensations.

After regretting the vacant cheerfulness of his earlier days, before domestick connections condemned him to incessant labour, and absorbed him in care and solicitude, he ex-

hibits this picture of the pain and pleasure that are mingled in his conjugal and paternal character.

But now domestick cares employ
And busy ev'ry sense,
Nor leave one hour of grief or joy,
But 's furnish'd out from thence ;

Save what my little babes afford,
Whom I behold with glee,
When smiling at my humble board,
Or prattling on my knee.

Not that my Daphne's charms are flown,
These still new pleasures bring;
'Tis these inspire content alone;
'Tis all I've left of Spring.

There is something extremely pathetick in the last verse ; and the first of the next stanza, where he mentions his wife as endeared to him by her sensibility and distress, is still more striking.

The dew-drops sparkling in her eye,
The lilly on her breast,
The rose-buds on her lips supply
My rich, my sweet repast.

He that can feel the following will need no assistance to discover their beauty, and to him, who cannot, no assistance will be effectual.

I wish not, dear connubial state,
To break thy silken bands :
I only blame relentless fate
That every hour demands.

Nor mourn I much my task austere,
Which endless wants impose ;
But oh! it wounds my soul to hear
My Daphne's melting woes :

For oft she sighs, and oft she weeps,
And hangs her pensive head ;

While blood her furrow'd finger steeps,
And stains the passing thread.

When orient hills the sun behold,
Our labours are begun;
And when he streaks the west with gold,
The task is still undone.

This poem, with these before-mentioned, and some others, were published in one volume in quarto, at the price of 3*s*. for the author's benefit; and if any of our readers shall be excited by this extract, at once to reward ingenuity, and assist industry to struggle with distress, the author of these extracts will participate with them in the highest and purest of all pleasures, that of communicating happiness to ingenious and worthy minds.

Thoughts on Self-preservation, with regard to Suicide.

THE law of self-preservation is one of the principal laws of nature, it is to other laws what existence is to other qualities; existence ceasing, all other qualities cease; the law of self-preservation being infringed, the foundation of other laws is shaken. To destroy one's self, in any manner whatever, is to be guilty of suicide. We must exist as long as possible for ourselves, for our friends, for our parents, for society, for mankind; all the relations that arehonest and agreeable in those respects belong to and suit us.

He who transgresses against the law of self-preservation, treads them under foot, and behaves as if he should say to those about him: "I renounce being any longer your "father, your brother, your husband, your friend, your "son, your fellow-citizen, your like." We have freely contracted some of those relations; therefore it does not depend on us to dissolve them without injustice. It is a compact into which we have been neither forced nor surprized; therfore as we cannot break it of our own authority, we require the consent of those with whom we have contract-

ed. The conditions of this treaty are become burthensome to us, but nothing hindered our foreseeing them; they might become so to others and to society; but in this case we would not have been forsaken. Let us grant then, that no one morally on the face of the earth is so useless and destitute, as to depart without taking leave of any but himself. The injustice of such a proceeding will be more or less great; but it will still be an injustice. You must therefore be careful that all your actions tend to the preservation of yourself and of others; this is the voice of nature that calls on us perpetually. Remember there is no choice to be made between existence and virtue.

Cheap, easy, & clean mixture for effectually destroying Bugs.

TAKE of the highest rectified spirit of wine (viz. lamp-spirits) that will burn all away dry, and leave not the least moisture behind, half a pint; new distilled oil, or spirit of turpentine, half a pint; mix them together, and break into it, in small bits, half an ounce of camphire, which will dissolve in it in a few minutes; shake them well together, and with a piece of spunge, or a brush dipt in some of it, wet very well the bed or furniture wherein those vermin harbour and breed, and it will infallibly kill and destroy both them and their nits, although they swarm ever so much. But then the bed or furniture must be well and thoroughly wet with it, (the dust upon them being first brushed and shook off) by which means it will neither stain, soil, nor in the least hurt the finest silk or damask bed that is. The quantity here ordered of this curious neat white mixture (which costs but about a shilling) will rid any one bed whatsoever, though it swarms with bugs. Do but touch a live bug with a drop of it, and you will find it to die instantly. If any bug or bugs should happen to appear after once using it, it will only be for want of well wetting the lacing, &c. of the bed, or the folding of the linings or curtains near the rings, or the joinings or holes in and about the bed or head-board, wherein the bugs and

nits nestle and breed; and then their being well wet all again with more of the same mixture, which dries in as fast as you use it, pouring some of it into the joints and holes where the spunge or brush cannot reach, will never fail absolutely to destroy them all. Some beds that have much wood-work can hardly be thoroughly cleared without being first taken down; but others that can be drawn out, or that you can get well behind, to be done as it should be, may.

Note: the smell this mixture occasions will be all gone in two or three days; which is yet very wholesome, and to many people agreeable. You must remember always to shake the mixture together very well, whenever you use it, which must be in the day time, not by candle-light, lest the subtilty of the mixture should catch the flame as you are using it, and occasion damage.

Corruption of manners has a natural tendency to promote the spirit of despotism.

WHEN man ceases to venerate virtue in himself, he soon loses all sense of moral beauty in the human species: His taste becomes gross; and he learns to consider all that is good and great, as the illusion of simple minds—the unsubstantial phantom of a young imagination: Extreme selfishness is his ruling principle, and he is far from scrupulous in following its dictates: Luxury, vanity, avarice, are his characteristics: Ambition, indeed, takes its turn; yet, not that noble ambition, which seeks praise and honors by deserving them, but the low spirit of intrigue and cunning, which teaches to secure high appointments, titular distinctions, or whatever else can flatter avarice and pride, by petty stratagem, unmanly compliance, the violation of truth and consistency, and at last, the sacrifice of a country's interest and safety.

In nations enriched by commerce, and among families loaded with opulence by the avarice of their forefathers, the mere wantonness of unbounded plenty will occasion a

corruption of manners, dangerous to all that renders society happy, but favorable to the despotic principle. Pleasure of the meanest kind will be the first and the last pursuit. Splendor, external show, the ostentation or riches, will be deemed objects of prime consequence. A *court* will be the place of exhibition; not of great merits, but of fine garments, graceful attitudes, and gaudy equipages—every frivolous distinction, which boldly claims the notice due to virtue, and assumes the dignity, which publick services ought solely to appropriate.

The mind of man, still wanting in the midst of external abundance, an object in futurity; and satiated, even to loathing, with the continual banquet of plenty, longs to add titular honors or official importance, to the possession of superfluous property: But these, if they mean any thing, are naturally the rewards of virtuous and useful exertion; and such exertion is incompatible with the habitual indolence—the ignorance—the dissipation—the vice of exorbitant wealth, gained only by mean avarice, and expended in enjoyments that degrade, while they enervate. Men, distinguished by riches only, possess not, amidst all their acquirements, the proper price that should purchase civil distinctions, if they were disposed of only to *merit:* There they are bankrupts: They have no claims on society; for their purposes have been selfish, and their conduct injurious; yet the distinctions must be obtained, or they sicken in the midst of health, and strive, though surrounded with plenty: How then shall they be obtained? They must be bought with money; but how bought? Not directly—not in the market-place—not at publick sale: But is there a borough hitherto anti-ministerial, and to convert which from the error of its ways, a very expensive election must be engaged in? The ambitious aspirant at honors is ready with his purse: By money he triumphs over opposition, and adds the weight of his wealth to ministerial preponderance: He assists others in the same noble and generous services of his country: Though covetous, he perseveres, regardless of expense and at last, richly merits, from his patron, the glittering bauble which hung on high, and led him patiently through those dark and dirty paths which terminate in the temple of prostituted honor: His brilliant success excites others to

tread in his steps with eager emulation; and though many fail of the glorious prize, yet all contribute, in the selfish pursuit, to increase and diffuse the spirit of despotism.

Men destitute of personal merit, and unrecommended by the plea of public services, can never obtain illustrious honors, where the people possess a due share of power—where liberty flourishes, unblighted by corruption; and therefore such men will ever be opposed to the people, and determined enemies to liberty: The atmosphere of liberty is too pure and defecated for their lungs to inhale: Gentles and other vermin can exist only in filth and putrefaction: Such animals, if they possessed reason, would therefore endeavor to contaminate every healthy climate—to destroy the vital salubrity of the liberal air, and diffuse corruption with systematic industry. Are there not political phænomena which would almost justify a belief in the existence of such animals in the human form; and is not mankind interested as they value their health, in impeding the progress of infectious pollution? Corruption does not operate, in the increase of the despotic spirit, on the highest orders only, and the aspirants at political distinction and consequence, but also on the crouded ranks of commercial life. In a great and rich nation, an immense quantity and variety of articles is ever wanted to supply the army and the navy: No customers are so valuable as the public: The pay is sure and liberal; the demand enormous, and a very scrupulous vigilance against fraud and extortion seldom maintained with rigid uniformity: Happy the mercantile men who can procure a contract: The hope of it will cause an obsequious acquiescence in the measures of the ruling minister: But it happens that such acquiescence, in such men, is peculiarly dangerous, in a commercial country, to the cause of freedom. The mercantile orders constitute corporate bodies, rich, powerful, influential; they therefore have great weight in elections: Juries are chiefly chosen from mercantile life. In state trials, ministers are anxious to obtain verdicts favorable to their retention of emolument and place. If the hope of contracts and other douceurs should overcome the sanctity of oaths, in an age when religion has lost much of its influence, then will the firmest pillar of freedom be undermined, and courts of justice become mere registers

of ministerial edicts. Thus both senatorial and judicial proceedings will be vitiated by the same means; and LIBERTY left to deplore a declining cause, while CORRUPTION laughs from a lord mayor's coach, as she rides in triumph to court, to present, on her knees, the address of sycophancy.

When the publick mind is so debauched as to consider titles and money as the chief good of man, weighed with which honesty and conscience are but as dust in the balance, can it be supposed that a due reverence will be paid to the obsolete parchments of a *magna charta*, to bills of rights, or to revolutions which banished the principles of the Stuarts, together with their families—which broke their despotism in pieces, together with their sceptres, and trampled their pride underfoot, with their crowns and robes of purple? The prevalence of corruption can call back to life the race of *jacobites* and *tories*, and place on the throne of liberty, an imaginary Stuart. It was not the person, but the principles which rendered the old family detestable to a people who deserved liberty, because they dared to claim it. The revival of those principles might render a *successor*, though *crowned* by liberty herself, equally detestable.

To avoid such principles, the corruption that infallibly leads to them must be repelled. The people should be tinctured with philosophy and religion; and learn, under their divine instruction, not to consider titular distinction, and enormous riches as the chief good, and indispensably requisite to the happiness of life. A noble spirit of personal virtue should be encouraged in the rising race: They should be taught to seek and find resources in themselves —in an honest independence—in the possession of knowledge—in conscious integrity—in manliness of sentiment —in contemplation and study—in every thing which adds vigor to the nerves of the mind, and teaches it to deem all honors disgraceful, and all profits vile, which accrue, as the reward of base compliance, and of a dastardly desertion from the upright standard of truth—the unspotted banner of justice.

A MASON'S FAREWELL.

YE brothers of fraternal mind,
Whom honor truth and justice bind,
In whom the sons of science find
No sly dissimulation;
Accept a tribute justly due
From a fond heart faithful and true,
Accept my tender last adieu,
And believe
That I grieve
Your worthy social band to leave
Because I am a Mason.

Although remote from you I stray
Where fickle fortune leads the way,
Your memory on my breast shall stay
Whilst I have respiration:
And let me hold the fond idea
That you will mind unworthy me
When e'er you meet in social glee,
Give a toast,
Let me boast
The friendship of your noble host,
I ask it as a Mason.

If e'er the Syrens of the age
Have lur'd me from the mystick gage,
Pray blot the error from the page
Of rigid observation:
Your kindness on my heart I'll write,
And all unkindness from my sight
I'll banish to eternal night;
Let us be
Masons free,
"Forgive, likewise forgiven," be
The creed of every Mason.

Your choicest love I once did share—
Your brightest badge did often wear,
Placed in the oriental chair,
By mystick installation;—

And by the emblematick three,
Dispensed the gifts of Masonry,
'Till the meridian orb we see,
Then we may
Wet our clay
And pass a cheerful hour away
In grateful relaxation.

A listening ear obtains the art,
A silent tongue will ne'er impart
The secrets of a faithful heart
Whatever the temptation:
But honor, justice, both combine
To dignify the grand design,
And love through all their actions shine,
With a mind
Just and kind—
All their pleasures are refined,
So happy is a Mason.

Their faith upheld by reason's voice,
Their hope foretells enjoyments choice,
In charity their hearts rejoice,
And bless each fond occasion:
When unforeseen misfortunes press
The sons or daughters of distress,
With kind fraternal tenderness
Prompts relief,
Sooths their grief,
Of their pleasures 'tis the chief
To raise a fallen Mason.

Humanity that virtue bright,
Friendship so lovely to the sight,
Brotherly love their hearts unite
In blest conciliation;
No doting sot their mirth shall wound,
No minor knows their rights profound,
No Atheist treads their hallowed ground,
No alloy
To their joy,
Pleasures pure which never cloy,
Belong to every Mason.

May friendship, harmony, and love,
Your guardians and companions prove
Till the celestial lodge above
Shall be each brother's station:
But death the level, time the line,
And plumb of justice must combine
To fit us for that bliss divine,
Then shall we
Happy be,
Towards the east we bend the knee
To our Grand Master Mason.

For the Monthly Magazine.

AH! sad is my bosom, as lonely I wander
Unfriended, unpitied, far, far from my home;
In the still of the night on the desert-heath yonder,
I weep, and I sigh for those days that are gone.

O days of delight, now forever departed!
On the eve when I left the dear friend that I lov'd
I sigh'd for my wrongs! and the tears sadly started,
As slow from the scenes of my country I rov'd.

The star of the west rose above the high billow,
And bright in the east shone the sun-painted sky,
When I bound my sad brow with a dark woven willow,
And breath'd an adieu to my friends with a sigh.

Swift o'er the high waves of the dark rolling ocean
The winds urg'd the barge from the scenes of my land;
And my bosom was thrill'd with the sadest emotion
As I gave a last look to my friends on the strand.

Yet dear is remembrance, that haunts my lone pillow
In dreams, I delight through my own scenes to rove;
And oft on the moss 'neath the dark waving willow,
I talk and I sigh to the girl that I love.

E.

STANZAS—FOR THE MONTHLY MAGAZINE.

I'VE stray'd long the banks of the smooth Susquehanna,
And have heard the slow sound of the stream o'er the rocks;
Tho' not on its banks grows the shading Bananah,
Yet the oak the rude storm in stern majesty mocks.

Ah dear was the time when I view'd its wide branches,
And repos'd with gay pleasure amid its cool shade:
I've slept undisturb'd with the fear of Savanges,
And in fancy I've heard the soft breeze in the glade.

Rude care and misfortune to my bosom were strangers,
And alive to my heart were the blessings of life;
Not then was it chill'd with the thoughts of wild dangers,
For it ne'er had experienc'd th' affliction of strife.

In those days of my bliss I had hop'd that my bosom
Would ne'er to the pangs of affliction be known;
Ah! tho' I was gay as the spring's early blossom,
Yet soon from my heart hast those fancied hopes flown.

My parents soon died, 'neath the cold marble yonder
Their ashes repose in the earth's silent womb;
Our hearts were entwin'd but by fate rent assunder
They peacefully sleep and I weep o'er their tomb.

O'er their tomb the last rays of the sun faintly streaming
There cherish the grass and the vilets around;
I often have gaz'd and with grief mark'd the gleaming
Which cheer'd the damp earth and the silence profound.

I then from my parents' lov'd cottage departed,
To regain my lost peace o'er the wide world I rov'd,
But its scenes of delight to my heart none imparted,
I returnd to repose with the friends that I lov'd.

In their grave shall my form, now dejected and weary,
Slow moulder in peace which no grief can destroy;
But from the dark mansion so silent and dreary
My soul will ascend to the regions of joy.

LORENZO.

For the Monthly Magazine.

BRIGHT shone the moon o'er yonder vale
And brightly shone the evening star,
Soft was the music of the gale,
That whispering came o'er moorlands far.

Slow were his steps through twilight's gloom,
And sadly flow'd his mournful plaint,
As Henry hied to Julia's tomb,
And wept and to the night complain'd.

O! by yon pallid orb above,
By the dim stars of yon dark sky,
By the drear sorrows of my love,
Ah! why did my lov'd Julia die.

O! was it meet that we should part!
Was all my bliss but fancy's dreams,
Was the sweet rapture of my heart,
But prelude to dark sorrow's scenes!

Her tomb, her cold, her icy tomb,
O'er which the rose and lilly rears,
I haunt alone at midnight's gloom,
And dew the sacred shrine with tears.

No more I roam like zephyr free,
No more on pleasures gale I sigh,
No more fair nature smiles for me,
For Julia's gone to realms on high.

Shade of my love! O do you lean
From heav'n's high orb, to dare life's storm?
Or glide you in the moon's bright beam,
Or hover o'er my woeful form.

Soon shall life's painful days be o'er,
And set my wand'ring spirit free,
Soon shall my sorrows be no more,
And angels guide my soul to thee.

EVANDER.

EMMA—FOR THE MONTHLY MAGAZINE.

OFT at morning's opening dawn,
Emma I espy'd with glee,
Tripping lightly o'er the lawn,
Seeming from all troubles free.

Emma, natures simplest child,
Nurst in her instructive school,
Modest, gentle, good and mild,
Guided e'er by virtues rule.

Nineteen summers o'er her head,
Light had wing'd their sportive time;
Joy its influence o'er her shed,
Since her life's unconscious prime.

Oft as loit'ring through the vale,
Have I listen'd to her song,
Sweetly warbling on the gale,
Through the groves and hills along.

But alas! now her dim eyes,
Glist'ning with the quiv'ring tear,
And her bosom's heaving sighs,
Tell her mind is sad and drear.

Thus one evening in the vale
Did she chaunt her woe-full tale.

" Blythe and gay the lark may sing,
" Mounting on his soaring wing;
" Roses bloom in freshness gay,
" Sparkling in the morning ray;
" Joy may flutter o'er my head,
" Mirth her influence on me shed,
" Vain alas! are all their aid
" Edwin in his grave is laid.
" Day of bliss! for ever gone,
" Never, never to return;
" Naught of joy now can I find
" Naught to sooth my anguish'd mind.

" O when thought runs back through time
" Viewing love's gay genial prime
" When with Edwin in the bow'r
" Oft I pass'd a blissful hour ;
" How my soul expands with woe.
" (God! can't I these pangs forgoe,
" Must I ever feel the smart
" Rankling deeply in my heart?)
" Oft when Cynthia rose to light
" Weary wand'rers of the night,
" Edwin would unfold his tale,
" As we rambled through the vale.
" Oft he sigh'd and vow'd he lov'd,
" Hand in hand as on we rov'd,
" Spoke of joys and bliss to come,
" Spoke of children wife and home.
" But alas! now in his cell,
" (Heav'n, who can my anguish tell!)
" Lies my Edwin, where the worm
" Fattens on his lovely form ;
" Yet Ah! soon we'll meet above,
" Meet to joy, to bliss, to love,
" Then in peace and love we'll rest,
" Greatly joyous, heav'nly bless'd.

W.

SPECULATION.

HAZARD, a careless fellow, known
At every gambling house in town,
Was oft in want of money, yet
Could never bear to run in debt;
Because, 'twas thought no man was willing
To give him credit for a shilling.
Dependent on dame fortune's will,
He threw the dice, or well, or ill;
This day in rags, the next in lace,
Just as it happen'd, sice or ace;
Was often-times, when not a winner,
Uncertain where to get a dinner.

One day, when cruel fortune's frown
Had stript him of his last half-crown,
Sauntering along, in sorry mood,
Hungry, perhaps, for want of food;
A parlor window struck his eye,
Through which our hero chanced to spy
A jolly round-faced personage,
Somewhat about the middle age,
Beginning a luxurious meal,
For 'twas a noble loin of veal;
And such a sight, I need not mention,
Quickly arrested his attention:
Surely, thought he, I know that face,
I've seen it at some other place—
I recollect, 'twas at the play,
And there I heard some people say
How rich this fellow was, and what
A handsome daughter he had got!
That dinner would exactly do,
A loin of veal's enough for two:
Could I but now strike out some way
To get an introduction, eh!
Most likely 'tis I may endeavor
In vain, but come, I'll try, however;
And now he meditates no more—
Thunders a rat-tat at the door.
The party-colored footman come,
"Pray is your master, sir, at home?"
"My master, sir, 's at home, but busy."
"Then he's engaged," quoth Hazard, "is he?"
In voice as loud as he could bellow,
"I'm very sorry, my good fellow,
It happens so, because I could
Your master do some little good;
A speculation that I know,
Might save a thousand pounds or so.
No matter, friend, your master tell
Another day will do as well."
"What's that you say?" the master cries,
With pleasure beaming from his eyes,
And napkin tuckt beneath his chin,
Bouncing from parlor, whence within

He'd heard those joy-inspiring sounds
Of saving him a thousand pounds!
"My dear sir, what is that you say?"
"Sir, I can call another day;
Your dinner I've disturb'd I fear."
"Do pray, sir, take your dinner here;
You'll find a welcome warm and hearty."
"I shall intrude, sir, on your party."
"There's not a soul but I and you."
"Well then, I don't care if I do."
Our spark's design thus far completed,
Behold him at the table seated,
Paying away, as well he might,
With some degree of appetite.
Our host, who willing would have prest
The thousand pounds upon his guest,
Still thought it would not be genteel
To interrupt him at his meal,
Which seem'd so fully to employ him,
Talking might probably annoy him,
So thought it better he should wait
Till after dinner, the debate;
And now, "the king and constitution,
With ill success to revolution,"
And many a warm and loyal toast,
Had been discust, when our good host
Thought it was almost time to say,
"Let's move the order of the day."
Indeed he hardly could help thinking
'Twas r[illegible] odd his guest was drinking,
The[illegible]t a jot the nearer,
[illegible]f madeira;
[illegible] to sit and chatter,
[illegible], and that and t' other matter,
[illegible]d not the least intention
[illegible]ousand pound of his to mention.
[illegible] did he wish to give a hint,
[illegible]iew not how he should begin 't;
[illegible]ngth, "sir, you've forgot, I fear,
[illegible]us'ness that has brought you here?
[illegible]nk you gave some intimation
[illegible]out a saving speculation."

"Ay, sir—you'll find it not amiss,
My speculation's simply this:
I hear you have a daughter, sir,"
"A daughter! well, and what of her?
What can my daughter have to do
With this affair 'twixt me and you?"
"I mean to make your daughter—craving
Your pardon, sir—the means of saving
The sum I mention. You'll allow
My scheme is feasible." "As how?"
"Why, thus—I hear you've no objection
To form some conjugal affection
For this same daughter." "No, provided
All other matters coincided."
"Then, sir, I'll suit you to a hair—
Pray is she not extremely fair?"
"Why—yes—there's many folks who praise her—
But what is beauty now-a-days, sir!"
"Ay, true sir, nothing without wealth;
But, come, suppose we drink her health!"
"Indeed I've drank enough already."
"Oh fie—consider, sir, a lady!
By rights we should have drank her first.
Pray fill," "well, if I must I must."
"And pray what age, sir, may she be?"
"God bless her,—she's just twenty-three."
"Just twenty-three! faith, a rare age,"
"Sir, you were speaking of her marriage."
"I was—and wish to know, in c[illegible]
"Such an occurrence should ta[illegible]
The sum it might be in your
To give with her by way o[illegible]
"Well then, sir, this is [illegible] could
If married with my own consent,
I've no objection on such grounds,
With her to pay ten thousand pounds.
"Ten thousand, sir, I think you say?"
"I do." "What! on the marriage day:
"The whole." "Then let her, sir, be
I'll take her off your hands with nine;
And that you'll call, I'm sure, good grou-
For saving you a thousand pounds."